

Appl. No 10/660,922
Amdt. Dated June 10, 2005
Reply to office action of May 24, 2005

Amendments to the Drawings

The attached sheets of drawings include changes to Figures 1 and 4. These sheets, which include Fig. 4A, replaces the original sheets including Fig. 1, 4 and Fig. 4A. In figure 1 the seedling tray lateral motion mechanism flexible cable connection to the seedling tray holder is relocated. In figure 4 the previously omitted identification of element 192 has been added.

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REMARKS/ARGUMENTS

In the Office Action the Examiner objected to claims 1-8 because of identified informalities in claims 1, 3, and 4. In response claim 1 has been amended to provide proper antecedent basis for "the seedling roots" to correct the objection to Claim 1. Claim 2 has been amended to provide proper antecedent basis for the "hydraulic pressure", and new Claim 13 has been added to provide proper antecedent basis for "the seedling tray positioning and advancing means" to correct the objections to Claim 3. New Claim 13 is dependant on amended Claim 1 and amended Claim 2 is dependant on new Claim 13. Claim 1 has also been amended to provide proper antecedent basis for "the seedling tray edges" to correct the objection to Claim 4. The applicant believes these amendments correct the informalities and the objection to Claims 1-8 is respectfully requested to be removed.

In the Office Action the Examiner also rejected claims 1, 2, and 9 under 35 U.S. C. 103(a) as being unpatentable over Williames (6,327,986) in view of Bouldin et al. (5,860,372). This rejection is traversed below.

In the action, the Examiner notes that Williames discloses individual seedling extraction (fig. 3b). Figure 3b in Williames shows a side view of the plant eject pins (17) which "engage the base of the root mass plug (21) of the plants within this particular row of cells." (column 8, lines 21-23). Williames therefore teaches extraction from the seedling tray of a row of seedlings at a time, and figure 3b is showing one cell of a row of cells. The applicant further notes Bouldin also teaches removal of seedlings from a tray one row at a time (column 10, lines 66-67). In contrast, applicant's invention includes means for individual seedling extraction from a seedling tray.

The Examiner further notes that "Bouldin et al. teaches that it is known in the art for a seedling handling apparatus to use a tray-handling device that allows the device to handle various sized trays (col. 2, lines 7-13). The discussion referred to in Bouldin et al. states "It would be desirable to develop a plant transplant apparatus and method which can quickly and accurately transplant plants from a seedling tray to a larger tray." This is not the same as handling trays of varying size or seedling spacing. The Bouldin et al. patent teaches (column 1, lines 10-16) a device for removing seedlings from a close spaced seedling growing cell tray, called a plug tray, into a second growing tray generally having a greater area of separation

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between the seedlings than the plug tray, called a delivery tray. The teaching is the delivery tray will allow further growth of the seedling (column 1, lines 16-18). The device taught in Bouldin et al. to remove seedlings from the plug tray uses a plurality of vertical pins (55 in Fig. 8) to rise up through holes (53 in Fig. 9) in the plate supporting the bottom of the plug tray. The pins and holes are shown of fixed dimension. These pins must align with the drain holes in the bottom of the plug tray so the pins may pass through the holes to raise the seedling plugs from their compartment in the tray (column 10, lines 58-67). There is no teaching in Bouldin et al. regarding allowing use of plug trays of varying sizes or spacing. Rather the teaching in Bouldin et al. is to remove seedlings from a plug tray of fixed size to accommodate the fixed spacing of the seedling removal pins (column 10, lines 58-67) and transplant the seedlings to the larger delivery tray (column 11, lines 43-44).

The applicant's invention thus teaches a device to provide individual seedling extraction from a tray and remove these seedlings from trays that may vary in size of the tray and in the spacing of the seedling growing cells in the tray. These are novel elements of applicant's invention. Applicant's Claim 1 includes means for individual seedling extraction, means for seedling tray size adjustment, and means for seedling tray cell spacing adjustment. These features are not taught by Williames (6,327,986) or Bouldin et al. (5,860,372) either alone or in combination. Claim 1 is therefore respectfully requested to be allowed.

Applicant's Claim 2 has been amended to more clearly state the feature of applicant's invention that provides means for a tractor connection so as to provide for additional control of the hydraulic pressure to applicant's invention in addition to the variation with the tractor speed. This claim is dependant on an allowable Claim 1, as shown above, and therefore includes all the limitations of that claim. Claim 2 is therefore respectfully requested to be allowed.

Applicant's claim 9 has been amended to more clearly describe the method of using applicant's invention to individually remove seedlings from tray containers of differing sizes and seedling spacing and plant them in a prepared growing field. The applicant's method includes adjusting the invention to accommodate the seedling tray size and the tray cell spacing. Since, as shown above, the combination of Williames (6,327,986) in view of Bouldin et al. (5,860,372) does not teach removal of seedlings from trays of varying sizes or spacing, the method of Claim 9 is not rendered obvious by Williames and Bouldin either alone or in combination. Claim 9 is therefore respectfully requested to be allowed.

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Claim 5 is canceled.

Claim 6 has been amended to more succinctly claim the seedling tray cell spacing adjustment means.

Claim 7 has been amended to indicate the number of seedling extractors may be one as indicated in paragraph [00130].

New Claim 14 has been added to claim the means for staggering seedling spacing.

New Claim 15 has been added to further claim the seedling tray positioning and advance means claimed in new Claim 13, described previously.

New Claim 16 has been added to further claims the means for staggering seedling spacing. This claim, is similar to canceled claim 5.

The revisions to the specification, paragraphs [0015], [0017], [00120], [000130], [00131], and [00145] are to correct typographical and grammatical errors. The revision to the specification paragraph [00128] is to make the description of the seedling tray consistent with that in paragraph [009] and the support of the seedling tray consistent with that in paragraph [0012].

The amendments to Fig. 1 and Fig. 4 correct errors on the original drawings.

Respectfully submitted:



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